RIVERWAYS PROGRAM

River Instream Flow Stewards
2005 Annual Report

The mission of the Riverways Programs is to promote the restoration and protection of the ecological integrity of the Commonwealth's rivers, streams and adjacent lands. All the Riverways Programs are based on the belief that local action is key to river protection. Riverways staff work side-by-side with local citizens, town officials and watershed associations to achieve the goals of restoration and protection of the state's riverine ecosystems. Goals include (1) protecting and restoring water quality, (2) protecting healthy stream flows; (3) protecting land along rivers and streams, (4) improving habitat for wildlife and fish in river corridors; (5) promoting pubic access to and/or along rivers for river-friendly recreation.

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Riverways' River Instream Flow Stewards (RIFLS) is an innovative, science-based program that addresses the harm caused to rivers and streams by depleted or altered stream flow. Stream flow has been a hot topic during recent years, and even during wet years some rivers and streams have run dangerously low or dry due to poor water resource management, increasing development, and wasteful practices such as excessive lawn irrigation. To address the need for flow data in local decision-making, RIFLS brings together a diverse group of partners and provides technical assistance to document and restore stream flow.

Despite record-breaking rains this fall, the Parker River (Georgetown, left) and Bennett Brook (Hinsdale/Peru, right) ran dry earlier this summer.

Partnerships

Protecting and restoring more natural stream flows can be a daunting task and one that requires the cooperation of many groups. Partnerships are a key component of the RIFLS program; they raise awareness about the importance of natural stream flow regimes and enable stream flow data to be used to improve habitat, water quality, and water quantity. Through local steering committees, this year's RIFLS partners were able to enhance other ongoing initiatives and develop stronger ties to their river communities.

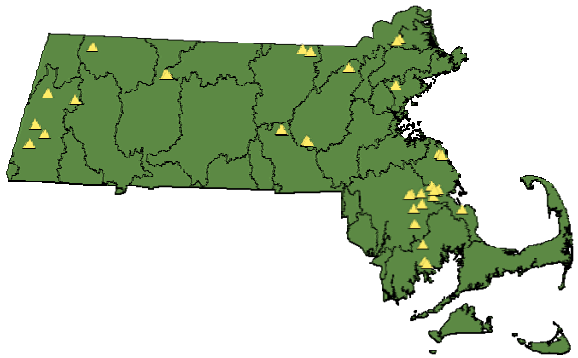
2005 RIFLS Participants & Partners

- Bridgewater State Watershed Access Lab
- Cedar Swamp Conservation Trust
- Coalition for Buzzards Bay
- Eel River Watershed Association
- First Herring Brook Watershed Initiative
- Housatonic Valley Association & Friends of the Williams River
- Jones River Watershed Association
- Nashua River Watershed Association & Nissitissit Chapter of Trout Unlimited

- Organization for the Assabet River
- Parker River Clean Water Association
- Saugus River Watershed Council
- Taunton River Wild & Scenic Committee
- Turners Falls Water Dept & Montague Conservation Commission

Stream Flow Monitoring

2005 RIFLS Sites



Local stewardship is at the heart of the RIFLS program and the RIFLS network of volunteers created an impressive record of data this year:

- 36 flow monitoring sites statewide (15 new in 2005!)
- 2,814 water depth measurements recorded by volunteers!
- 144 stream flow measurements made by Riverways staff
- 6 participants completed the Certification Program

In addition to volunteers' accomplishments, several RIFLS rivers were chosen to receive real-time United States Geologic Survey (USGS) stream flow gauging stations this year as part of a funding agreement with the Executive Office of Environmental Affairs! RIFLS partners the Eel River Watershed Association and the Coalition for Buzzards Bay helped to raise local and state officials' awareness about stream flow issues in their watersheds, which resulted in their designation for new gauges. Up to 30 other new USGS gauges will be added statewide, too.

Year of the Flood

Despite the fact that several rivers in the RIFLS network ran dry this summer, most people will probably remember 2005 as a very wet year because of October's significant storms. Across the state, rainfall was 227 to 448% of normal for the month, making it the wettest October on record! Groundwater levels and river flows responded to the storms as well. Three of the USGS' groundwater wells recorded their highest levels ever and several rivers in MA experienced 100-200 year flood events! (data from "Current Water Conditions in Massachusetts, November 10, 2005". MA Dept. of Conservation and Recreation report to the Massachusetts Water Resources Commission)

Several RIFLS stream gauges were swept away or knocked askew by swollen rivers during the floods. Jackstraw Brook in Westborough overtopped Warren Street and ran into neighbors' basements. Undersized culverts, a lack of streamside vegetation, and upstream development exacerbated the effects of flooding in this area. RIFLS partners the Cedar Swamp Conservation Trust are organizing a meeting with town officials and neighbors to discuss ways to alleviate future problems, such as adeqautely sizing replacement culverts, planting streamside buffers, and retrofitting upstream development with rain gardens or other low impact development techniques that intercept stormwater runoff.

Jackstraw Brook (Westborough) flood
October 15, 2005

Jackstraw Br. erosion & sedimentation
November 2, 2005

Feature Article
Citizen Involvement in Water Management Permitting

The Water Management Act authorizes the Massachusetts Department of Environmental Protection (DEP) to regulate the quantity of water withdrawn from both surface and groundwater supplies. Public input to this process it vital to ensure that all local resources are protected. DEP's regulations require consideration of a broad variety of issues and resources:

- the safe yield of the water source
- impacts on other withdrawal points and sources
- the seasonality of a withdrawal
- reasonable protection of water uses, land values, investments, and enterprises that are dependent on previous withdrawals
- the use to be made of the water withdrawn
- local or state water resource management plans
- reasonable conservation practices and measures
- reasonable protection of public drinking water supplies
- water quality
- wastewater treatment capacity
- groundwater recharges areas
- navigation
- hydropower resources
- water-based recreation
- wetland habitat, fish and wildlife
- agriculture and floodplains
- the impact on reasonable economic development and job creation

groundwater well

Safe Yield

The principal basis for controlling permitted water withdrawals is safe yield, which is currently defined as "…the maximum dependable withdrawals that can be made continuously from a water source including ground or surface water during a period of years in which the probable driest period or period of greatest water deficiency is likely to occur; provided, however, that such dependability is relative and is a function of storage and drought probability." The concept of safe yield can be applied at multiple scales. If a water withdrawal exceeds the entire safe yield of a basin or if a proposed withdrawal exceeds the safe yield at a particular site then the permit must be denied. In 2005 DEP removed the quantitative method for determining a basin's safe yield from their regulations because it was widely agreed that it did not work. A new quantitative method is under study but is several years from completion.

Registration & Permitting Program

The Water Management Act authorizes DEP to review all water withdrawals greater than 100,000 gallons per day (gpd) and gives DEP the authority to regulate smaller withdrawals if necessary. Every withdrawal greater than 100,000 gpd must either have a registration or a permit.

Registered Withdrawals: The registration program was for withdrawals in excess of 100,000 gpd that existed when the Water Management Act was passed (essentially a registered use is a "grandfathered" use). Registrations must be renewed every 10 years and have not, to date, been conditioned the same way as permits, for example to protect the safe yield of a basin. By 2008 all registrations will expire unless they are renewed. DEP is considering whether registration renewals will include the same performance standards as permits during this renewal round.

Permitted Withdrawals: All water withdrawals over 100,000 gpd that do not have a registration require a water management permit. DEP uses the Water Resource Commission's basin hydrologic stress classifications to help determine specific Performance Standards for water management permits, including limits on residential water use per person, unaccounted-for water (i.e. leaks), summertime water use, and offsets for new withdrawals.

What You Can Do

- Public comment periods for New Source Site Exams and Water Management Permit applications are announced in the Environmental Monitor. You must contact DEP to be informed about five year permit reviews and permit amendments, which often have just as much potential environmental impact as new sources. In your comments, focus on the impact of the withdrawals at both the local and watershed level. Stress the determination of safe yield: an action should not be permitted if it causes "unreasonable damage to the water resource". Include information about other items that DEP is required to consider. Finally, work with others on your comments to give your letter additional weight and support.
- Lead a public education campaign about water conservation to reduce demand. Work with your local water supplier to alleviate the pressure placed on them to "provide for the public" and help meet permit requirements for education.
- Pass bylaws for: aquifer protection and stormwater recharge districts, water and sewer banks, stormwater utilities, low impact development, and water conservation/drought restrictions. Passage of these bylaws will help your town to meet its permit requirements.
- Protect natural groundwater recharge rates by conserving land in areas that contribute to water supplies.
- Conduct integrated water resources planning that assesses the impact of current and future water supply withdrawals, wastewater discharges, and stormwater runoff on the water balance of each subwatershed and focuses restoration efforts in areas with the greatest imbalance.
- Support DEP's inclusion of current permit performance standards in registrations during the 2008 registration renewal period.

Appeals

If you are aggrieved by a DEP decision you may request an adjudicatory hearing within 21 days of permit issuance. Once an administrative law judge has made a decision, the permit returns to DEP for final decision by the DEP Commissioner. If this decision is also unsatisfactory, you may appeal to the Massachusetts Supreme Court.

Conclusion

Your input into the Water Management permitting process is an important step to ensure that your town's permit is in the best interest of the town and its natural resources. Ultimately though, the responsibility for wise water resource management falls on local planners and citizens who should demand an integrated, watershed approach that addresses water supply, wastewater and stormwater concerns to sustain local hydrologic balance.

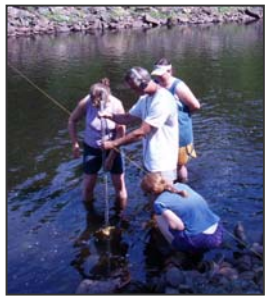
Websites

Department of Environmental Protection
www.mass.gov/dep/
Robert Golledge, Commissioner: Robert.golledge@state.ma.us
DEP Contact Information:
www.mass.gov/dep/about/region/findyour.htm
Water Management Act
http://www.mass.gov/legis/laws/mgl/gl-21g-toc.htm
Stressed Basins Report
www.mass.gov/dcr/waterSupply/intbasin/stressed_basins.htm
Water Management Act Regulations
www.mass.gov/dep/water/laws/regulati.htm#wmgt
Water Management Act Policy & Guidance Documents (scroll down)
www.mass.gov/dep/water/laws/policies.htm#wmgt
The Environmental Monitor (select Environmental Monitor)
www.mass.gov/envir/mepa/

Certification Program

Last July, volunteers from the Nashua River Watershed Association, the Turners Falls Water Department, Trout Unlimited, the Jones River Watershed Association, and the Ipswich River Watershed Association completed the RIFLS Certification Program. Volunteers learned how to measure stream flow using a velocity meter, wading rod and tape measure. In addition, participants became certified to train new RIFLS volunteers for their sites. The program involved one evening of classroom instruction followed by a fun-filled field day with Riverways and USGS staff.

Once volunteers were trained in the proper protocols, they were able to measure stream flow in their rivers independently and use this information to verify the rating curves developed for their RIFLS sites. This crucial step allows volunteers to document the accuracy of their data independently over the long term and allows Riverways staff to work with additional groups to protect and restore stream flow statewide.



Martha Morgan, Doug Roberson, and Christina Bird learn to measure water velocity from USGS technician Linda Comeau during the RIFLS Certification field training.

Riverways is pleased to be offering the Certification Program again this spring. If you or another current RIFLS volunteer is interested in participating, please contact Margaret Kearns at (617)-626-1533.

Water Management Conferences a Success!

Last April, Riverways hosted the Massachusetts Streamflow Conference. The size of the audience (about 300!) attested to the relevance of this topic in our state and the widespread interest in new ways to maintain and restore more natural flow regimes! RIFLS volunteers Shep Evans and Lance Van Lenten shared their stories of working to restore flows to their rivers. In November, a complementary conference, Beyond Sewering, was presented to help generate interest in alternative sewage treatment techniques that better maintain local groundwater recharge and river base flows while still providing adequate or even enhanced water quality treatment.

Stream Flow Protection & Restoration

Parker River, Georgetown

The Parker River has once again run dry, consistent with the decade-long declining trend documented by the USGS stream gauge at Byfield, and is considered a "high stress" river. This issue is gaining weight as Georgetown's Water Management Permit is in the midst of its five-year review by DEP. The Parker River Clean Water Association (PRCWA) sent a letter to the DEP in support of water conservation restrictions and public education.

RIFLS staff worked with the PRCWA to install staff gauges at two locations along the Parker River this year, upstream and downstream of the municipal pumping station in Georgetown. The resulting discharge data revealed no flow and very low water levels at the downstream location for nearly a two-month period from August to October. The upstream location was rendered useless as beaver activity increased downstream of the gauge. A new site will be chosen in 2006.

Saugus River, Lynnfield

Sudden, unusual drops in flow were recorded both above and below the dam in the summer of 2005, the lowest levels since the early 1990s. Possible factors include upstream beaver activity in Reedy Meadow, dredging around Mill Pond, and low water levels in Lake Quannapowitt. In addition, no voluntary flow releases during low flow periods of the summer occurred in 2005 because lake levels were too low to allow the release.

The Saugus River Watershed Council (SRWC) worked with the Lynn Water and Sewer Department, the National Park Service, and the Division of Marine Fisheries on a herring habitat assessment of the area between Lake

Quannapowitt and the Lynn Dam. The results of the NOAA-funded study suggest that the lack of suitable aquatic habitat is a serious impediment to herring restoration in this system. The SRWC is working on ideas for restoring the hydrology of the area.

Larrywaug Brook, Stockbridge

Little progress has been made in the adaptive management of lake levels and downstream flows at Stockbridge Bowl. For the third year in a row, the lake drawdown was both unsuccessful and failed to maintain stream flow in Larrywaug Brook necessary to sustain aquatic communities. Beavers also added to difficulties when they began building a dam on top of the Stockbridge Bowl outlet in September, causing extreme low flows to last even longer.

Low flow on Larrywaug Brook
September 2, 2005

Emphasis needs to continue to be placed on developing the capacity to manage lake drawdowns without impairing downstream aquatic life. It will be of vital importance for the town to have the assistance or cooperation of the Conservation Commission and the Stockbridge Bowl Association, the local lake association, in this important task.

First Herring Brook, Scituate

After a presentation to the Scituate Board of Selectmen, who are also Water Commissioners, interest was drawn to the importance of gathering stream flow data. RIFLS volunteers from the First Herring Brook Watershed Initiative (FHBWI) have also expressed an interest in modeling flow in the river to assess whether herring restoration is possible, especially after a site visit by Brad Chase from the Department of Fish and Game identified low flows as the major hurdle to herring restoration.

Two more inflow gauges were installed this summer on tributaries to First Herring Brook — Clapp Brook and Tan Brook. This additional data should provide a better picture of inflows to the town's water supply and help the town as it tries to find a way to restore river flow for herring and simultaneously supply a growing population with drinking water.

Bennett Brook, Hinsdale

The Housatonic Valley Association is concerned that flow in Bennett Brook has at times run dangerously low due to the operation of the outlet of Ashmere Lake just upstream. The brook nearly ran dry in the fall of 2005, reaching its lowest levels during September. The low flows that occurred were unrelated to season and precipitation but were caused by restricted flow from the Ashmere Lake dam. Also of concern are low flows in the spring of 2005, at a time of the year when snowmelt normally drives up discharge.

One possible remedy might be a lake outlet management plan, which could be drafted with input from a stakeholder group using the local Conservation Commission's Wetland Protection Act authority, to regulate stream levels in Bennett Brook.